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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/749,130	12/30/2003	Alessia Pavan	2110-99-3	3296
996 7590 01/15/2009 GRAYBEAL JACKSON LLP 155 - 108TH AVENUE NE SUITE 350 BELLEVUE, WA 98004-5973			EXAMINER MOVVA, AMAR	
			ART UNIT 2894	PAPER NUMBER
			MAIL DATE 01/15/2009	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

## Application No.

10/749,130

## Applicant(s)

PAVAN ET AL.

## Examiner

AMAR MOVVA

## Art Unit

2894

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 27 October 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 39-46 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 39-46 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SG/US)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 39 and 41-43 are rejected under 35 U.S.C. 102(b) as being anticipated by Arai '688. Arai discloses a memory comprising: a pair of adjacent cells having separate floating gates (4, fig. 2); a field oxide (2, fig. 2) between said cells; a first dielectric (5, fig. 2) covering said floating gates and said field oxide; a second dielectric (10, fig. 2) over said first dielectric between said floating gates, said second dielectric having a lower dielectric constant than said first dielectric (col. 8,9); and a control gate over said first and second dielectrics. Said first dielectric includes a nitride (col. 8). Said first dielectric includes ONO (col. 8). Said memory is a FLASH memory (col. 1).

3. Claims 39, 41, and 46 are rejected under 35 U.S.C. 102(b) as being anticipated by Tanimoto '630. Tanimoto discloses a memory comprising: a pair of adjacent cells having separate floating gates (105, fig. 4c); a field oxide (102, fig. 4c) between said cells; a first dielectric (bottom oxide oxide and nitride of ONO of 107, fig. 4c) covering said floating gates and said field oxide; a second dielectric (upper oxide of ONO of 107, fig. 4c) over said first dielectric between said floating gates, said second dielectric having a lower dielectric constant than said first dielectric [0049]; and a control gate

(109, fig. 4c) over said first and second dielectrics. Said first dielectric includes a nitride [0049]. A region between the floating gates and under said control gate, said region entirely filled by said first and second dielectrics (fig. 4c).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 40 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arai' 688 in view of .

a. Arai discloses the device of claim 39 and that the second dielectric is silicon oxide. Arai, however, does not expressly disclose that the silicon oxide is doped with fluorine.

b. Liu discloses a non-volatile memory cell wherein gates are separated laterally via a low-k silicon oxide doped with fluorine (48/42, fig. 8a-9b, lines 27-33, col. 6).

c. It would have been obvious to one of ordinary skill in the art at the time of the invention to have used Liu's low-k silicon oxide layer doped with fluorine in Arai's dielectric layer in order to reduce capacitive coupling between the adjacent gates (lines 27-33, col. 6 of Liu).

6. Claims 40 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arai' 688 in view of .

- a. Arai discloses the device of claim 39 and that the second dielectric is silicon oxide. Arai, however, does not expressly disclose that the silicon oxide is contains carbon.
- b. Ahn discloses a semiconductor device wherein the gate is insulated laterally from other gates via a silicon oxide carbon oxide alkyl layer (140, fig. 3,[0019[0020])
- c. It would have been obvious to one of ordinary skill in the art at the time of the invention to have used Ahn's silicon oxide carbon oxide alkyl layer in Arai's dielectric layer in order to reduce capacitive coupling between the respective floating gates (lines 27-33, col. 6 of Liu).

### ***Response to Arguments***

Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AMAR MOVVA whose telephone number is (571)272-9009. The examiner can normally be reached on 7:30 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kimberly Nguyen can be reached on 571-272-2402. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Amar Movva  
Examiner  
Art Unit 2894

Am

/Bradley K Smith/  
Primary Examiner, Art Unit 2894